The Basel region life sciences cluster 2017

Going from Strength to Strength

Initiative “Life Sciences Cluster Region Basel”
The Basel region is without doubt one of the leading life sciences clusters in the world, particularly with regard to the number of employees and GDP per capita. Yet, what lies behind these figures? We provide insight into the cluster’s strengths and present the DNA of the Basel region’s life sciences industries. Where did the Basel region’s life sciences companies originate from? Which parts of the life sciences value chain do they cover? In which fields of research does the Basel area have its strengths? This booklet is the first of its kind for the region. It captures the diversity and strengths of the region’s life sciences cluster in a nutshell. It is primarily aimed at political decision makers, entrepreneurs, company executives, investors, and the interested public.
The life sciences sector can be divided into two subsectors:

1. **Core fields in life sciences:**
   pharmaceutical industry, biotech industry, medtech, bioinformatics, agrochemistry, nanotechnology.

2. **Complementary fields in life sciences:**
   Sales and distribution of life sciences products, medical and scientific research, manufacturing of medical devices, medical laboratories, and the like.

In total, 805 firms were counted in the Basel region life sciences cluster. Along the value chain, we distinguish between companies focusing on

1. **Core activities (R&D, production, sales, etc.):**
   448 companies

2. **Support activities (IT and communication consultancy, infrastructure services/support, etc.):**
   357 companies

In addition, more than 200 companies in neighboring regions (such as southern Germany and Alsace, France) complement the Basel region life sciences cluster.

**Core Firm:** With a large employment base and a very long history.

**Merger & Acquisition:** Merged with or got acquired by another corporation.

**Research Institution/Corporate Spin-off:** Founded by at least one entrepreneur who worked for a research institution and at least one other entrepreneur who worked at a corporation immediately prior to founding the firm.

**Corporate Spin-off:** Founded by one or more entrepreneurs who worked for a corporation immediately prior to founding the firm.

**Subsidiary:** With headquarters outside of the Basel region, but maintains a subsidiary here.

**Research Institution Spin-off:** Founded by at least one entrepreneur who worked for a research institution immediately prior to founding the firm.

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1. The Cantons of Basel-Stadt, Basel-Landschaft, Fricktal (Canton of Aargau) and the Thierstein-Dorneck municipalities (Canton of Solothurn)
The Basel region in comparison …

**Rich source of talent**
Top talent pool with approx. 33,000 highly qualified employees in life sciences. Up to 100,000 jobs are generated through the pharmaceutical sector. Nowhere else is the density of talents as high as in the Basel region.²

**Industry share of employment in the life sciences (in %)**³

<table>
<thead>
<tr>
<th>Basel Region</th>
<th>Oresund</th>
<th>Boston-Cambridge-Newton</th>
<th>San Francisco Bay Area</th>
<th>Singapur</th>
<th>Zurich Region</th>
<th>New York</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

Source: BAK Economics, 2016

**Number one in added value**
No other region in the world has a higher production volume in life sciences than the Basel region. In comparison with other locations, the Basel region has seen strong growth in life sciences since 1991. Taken together, other companies benefit from local pharmaceutical research and production amounting to an added value of over 15.6 million USD.²

**Nominal gross value added 1995–2016 (in USD million)**³

<table>
<thead>
<tr>
<th>Basel Region 1</th>
<th>Zurich Region 2</th>
<th>Munich Region 3</th>
<th>Öresund 4</th>
<th>Paris 5</th>
<th>Singapur 6</th>
<th>London 7</th>
</tr>
</thead>
</table>

Source: BAK Economics, 2016

² BAK Economics, 2016
³ Based on ISIC standard for life sciences: aggregation of the pharmaceutical industry (ISIC 21), electronic medical technology (ISIC 26.6), orthopedic medical technology (ISIC 32.5) and research and development in biotechnology (ISIC 72.11).
The Basel region dominates Switzerland’s life sciences exports
Approx. 60% of the Swiss pharma and chemical exports are developed and produced here.⁴

Frontrunner in innovation
Basel is the most innovative region in Switzerland with the highest innovation potential and a high density of related industries and knowledge spillovers.⁵

Compared to other leading life sciences locations, the Basel region has the highest R&D expenditure by industry, making it the world’s leading hub for life sciences innovation.⁴

Expenditure on R&D 1991–2012 (in %)

Source: BAK Economics, 2013

⁴ BAK Economics, 2016
⁵ Cantonal Competitiveness Indicator UBS, 2016
Basel is a global leader in innovation as indicated by the highest number of patent applications (per million inhabitants) – five times higher than the Swiss average.\(^6\)

Basel life sciences companies (Novartis & Roche) have been incredibly successful and delivered more new molecules than any of their competitors.\(^7\)

**Patent applications in the pharma sector (per million inhabitants)**

<table>
<thead>
<tr>
<th>City</th>
<th>Patent Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basel</td>
<td>170</td>
</tr>
<tr>
<td>Boston</td>
<td>91</td>
</tr>
<tr>
<td>San Francisco</td>
<td>68</td>
</tr>
<tr>
<td>Schweiz</td>
<td>33</td>
</tr>
<tr>
<td>München</td>
<td>21</td>
</tr>
<tr>
<td>Paris</td>
<td>20</td>
</tr>
<tr>
<td>Mailand</td>
<td>13</td>
</tr>
<tr>
<td>New York</td>
<td>12</td>
</tr>
<tr>
<td>London</td>
<td>9</td>
</tr>
</tbody>
</table>

Source: DECO PatReg, BAK Economics, 2014

**The life sciences companies Novartis and Roche based in the Basel region have delivered more new molecules than any of their competitors**

**New chemical/molecular entity approvals for selected companies**

- **Novartis Roche**: 22
- **GSK**: 10
- **Bayer**: 4
- **Eli Lilly**: 4
- **Pfizer / Wyeth**: 7
- **Merck / SGP**: 5
- **Sanofi**: 9
- **Astra Zeneca**: 7
- **Johnson & Johnson**: 13
- **Bristol-Myers Squibb**: 10

\(^6\) Interpharma, 2015

\(^7\) FDA, EMA, PMDA, CFDA, 2016
Located in northwestern Switzerland in immediate proximity to Germany and France, the Basel region life sciences cluster is exceptionally well accessible. The tri-national EuroAirport, the Rhine, and excellent road as well as train networks provide fast and easy travel.

The local public transport system is very well developed; moreover, at the core of the cluster two of the global top three pharma companies are within walking distance. Functions such as R&D and headquarters tend to be based at the center of the cluster, while production and supporting functions are located on the outskirts of town.
The companies in the Basel region life sciences cluster are predominantly active in biotech and pharma. Two of the top three global life sciences companies, Roche and Novartis, are headquartered in Basel. Other well-known companies including Actelion, Idorsia, Bayer, Clariant, Lonza, Basilea, Evolva, and Santhera bolster the cluster. Today, pharmaceutical companies based in the Basel region, make annual investments totaling six billion Swiss francs (roughly equivalent to USD) in research and clinical development of new active ingredients. The Basel region is home to a wide range of medical technology companies including global firms like Straumann, Medartis, Camlog, and Cochlear, as well as small and medium-sized companies such as Bühlmann and AOT.

Bioinformatics is an emerging subsector and is expected to grow rapidly owing to further development and engagement in precision medicine in the Basel region life sciences cluster. At the forefront of this promising field are companies like Genedata, Clinerion, and BC Platforms.

n=341

A leading pharma & biotech hub with an emerging strength in bioinformatics
The companies in the Basel region life sciences cluster represent the full scope of value chain functions. The industry is fully integrated and key competencies such as headquarters and shared services, research and development, sales and marketing, as well as manufacturing are all locally situated. The industry benefits from the presence of numerous supporting firms and organizations. This represents a distinct competitive advantage over other life sciences regions as knowledge and competencies can easily transition from R&D to manufacturing, to sales and manufacturing, and vice versa. Knowledge-based industries like the life sciences benefit from such flows, and in this sense the Basel region provides a unique environment.

The Basel region is also in a commanding position with respect to the value chain sectors located up- and downstream of the core cluster, represented, for instance, by 55 contract research organizations.
The majority of the life sciences firms in the Basel region conduct research and develop products in the field of cancer treatment. The second most important field is infectious diseases, followed by dermatology, and molecular and cell biology.

Source: Initiative "Life Sciences Cluster Region Basel", 2016
n=215
Basel’s Novartis and Roche together command a share of 38% of the global cancer drugs market. But they are not the only ones. The region is also home to other companies of varying sizes active in cancer treatment.

Top 10 cancer drugs worldwide by revenue (in billions U.S. dollars)

Source: Statista, 2015

Statista, 2017
The medical technology industry in the Basel region life sciences cluster is active in a wide range of fields. Most important is the development and production of diagnostic devices. This is followed by implants, disposables, surgical instruments, and electro-medical products.

n=114
The Basel region’s life sciences cluster is a breeding ground for startups and spinoffs. Many internationally renowned research institutes and universities in the region provide a dynamic basis for research, development, and entrepreneurship.

n=176
The Basel region is the perfect location for subsidiaries of life sciences enterprises across the globe. With its multilingual and international talent pool, the density of the life sciences cluster, and its leading position in innovation power and reachability, the Basel region is the perfect place for evolving and strengthening your business.

Countries of origin

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n=51

9 Cantonal Competitiveness Indicator UBS, 2016
Fertile ground for precision medicine

Precision medicine is an emerging approach for disease treatment and prevention that will radically change the delivery of healthcare. It takes into account individual variability in genes, environment, and lifestyle to provide the right therapy for the right patient at the right time. The Basel region has the knowledge infrastructure to lead this transformation: it boasts leading life sciences firms, entrepreneurial biotech and a strong academic and healthcare provider environment. In the current life sciences strategy, the Basel region has defined clear measures to foster collaboration on major global health challenges between academia, healthcare providers and industry. Focusing efforts on innovative fields that build upon existing local strengths, such as health and bioinformatics, sensors, health technology assessment and integrated health technology delivery, is key. Several on-going initiatives such as DayOne and the Swiss Personalized Health Network will enhance the further development of the ecosystem.
Challenges and outlook

The Basel region has managed to build one of the most complete life sciences ecosystems worldwide. Its large potential in the region with more than 800 life sciences firms throughout the whole value chain and over 33,000 employees in the industry promises to make the Basel region’s life sciences industry even more competitive over the next decade, harnessing technological change to foster innovation. Outstanding opportunities lie in innovative areas with high growth potential such as digital health, providing the region the chance to position itself as a leading centre of competence with a strong digital health cluster.

Methodology

The data for this study was collected through the triangulation of different sources. They included existing data files from project partners as well as reliable information from external sources such as Kompass, Moneyhouse, Swiss Biotech Directory, Biotechgate, CRIF Ltd., and the Swiss Federal Statistical Office. Collaboration with the unit Economic Geography at the Institute of Geography of the University of Bern, Switzerland, enabled further analysis and comparison of the findings. The variation of the sample sizes in this study can be attributed to the difference in the availability of information from industries and companies available at the time of data analysis.

About us

Since 2014 and based on the Initiative “Life Sciences Cluster Region Basel” developed by the Basel Chamber of Commerce, a group of organizations has been pursuing the objective of strengthening the region as a life sciences hub.
Colophon

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